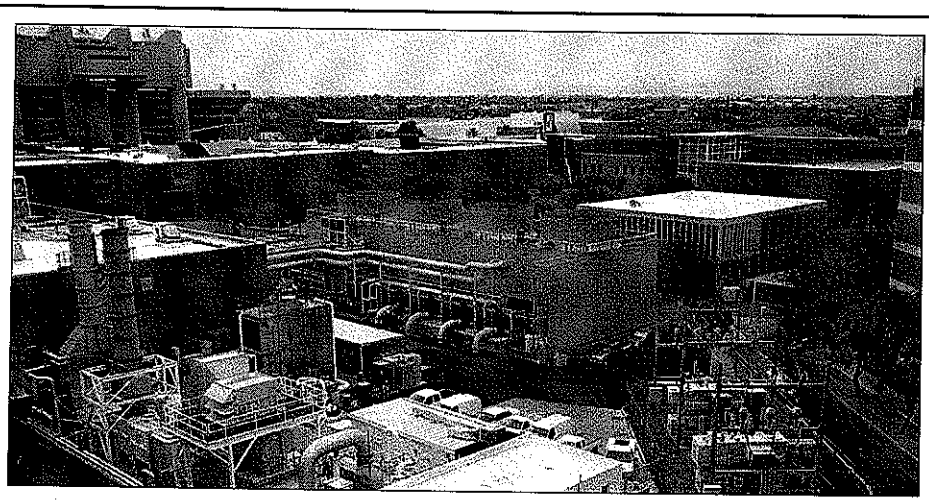
COMBINED HEAT & POWER: AN ENERGY OPPORTUNITY FOR MICHIGAN

MIDWEST COGENERATION ASSOCIATION
SENATE ENERGY & TECHNOLOGY COMMITTEE
September 17, 2015

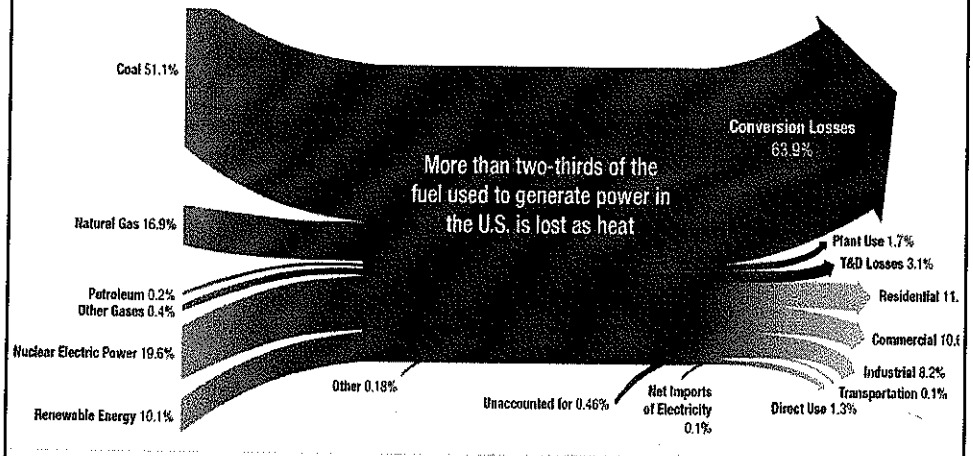
Midwest Cogeneration Association

- The MCA is a not-for-profit professional association dedicated to promoting clean and energy efficient cogeneration technologies in eight Midwest states, including Michigan.
- MCA members include representatives of CHP and WHP technology manufacturers, distributors, and project developers - many of whom have manufacturing facilities and business operations in Michigan.
- Our members have expertise in CHP and WHP technologies, as well as project financing and development.



Combined Heat and Power simultaneously generates electricity and captures useful heat energy at industrial, institutional, and commercial facilities.

Fuel Utilization by U.S. Utility Sector



Source: http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_report_12-08.pdf

VALUE PROPOSTION: CHP vs TRADITIONAL POWER

- 60-80% Efficiency
- No T &D Line Losses
- 97.5% Reliability (on-peak)
- Lower Energy Cost for Businesses
- Avoids Construction of New Power Plants
- Lower Emissions = Lower Compliance Costs
- Resiliency

CHP SYSTEMS

- Only 33% Efficient
- T & D Line Losses (7%+)
- Rising electricity costs hurt Michgan businesses
- Rising emission compliance costs
- Vulnerability to natural disasters

CENTRALIZED POWER PLANT

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Michigan Energy Forecast

- MISO 2016 Resource Adequacy Forecast
  - 2016 -Region Shortfall - 2.3 GW
  - 2016 -Michigan Sub-Region Shortfall - 1.2 GW
- MISO 2023 - Region Shortfall - 12.3 GW
- As reserves erode, probability of black-outs requiring emergency operating procedures increases:
  - Regional Forecast - 3 days/yr by 2016
  - Industry Reliability Standard - 1 day/10 yrs

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Michigan CHP &WHP Current and Potential

- 99 CHP and WHP projects in Michigan
  - 3,453 Megawatts (DOE CHP Database 2015)
  - Largest: Dow Chemical in Midland (1,370 MW)
  - Smallest: Wayne State University in Detroit (5 kW)
- *4,748 Megawatts* of unrealized potential CHP/WHP projects in Michigan's commercial, institutional and industrial sectors. (ACEEE, 2014)

THIS IS A HUGE
PROVEN & AVAILABLE
BASELOAD ENERGY RESOURCE

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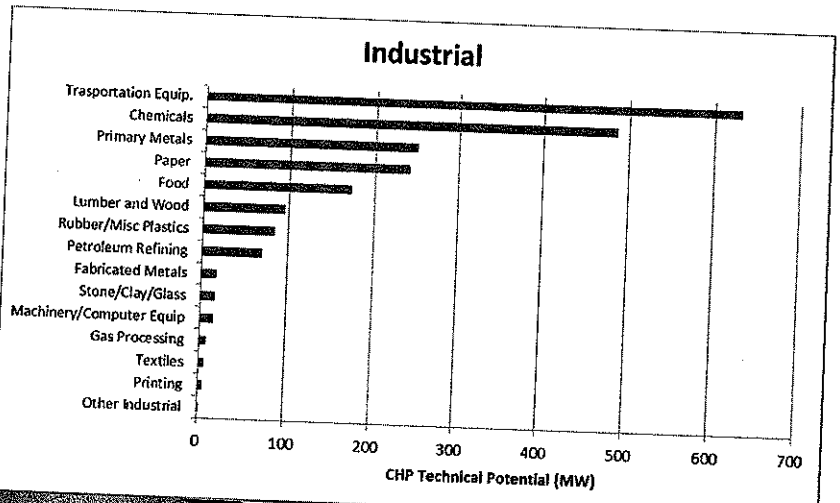
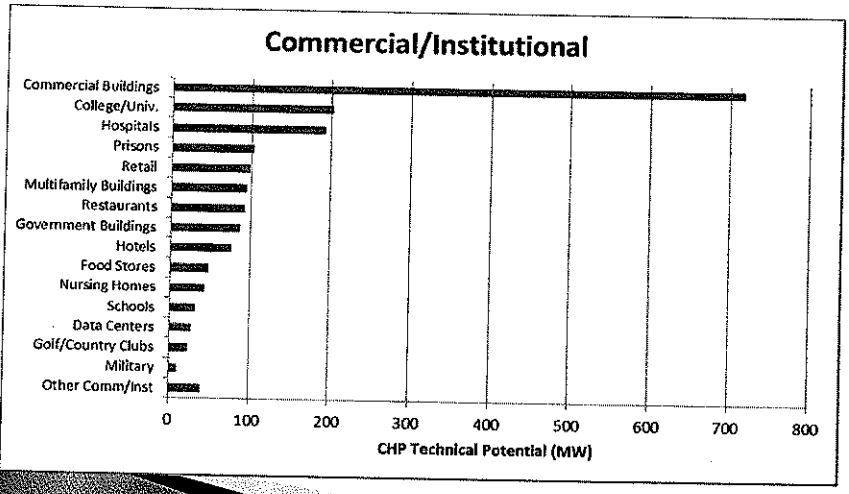
INDUSTRIAL CHP Opportunities in Michigan Technical Potential (Megawatts)



COMMERCIAL/INSTITUTIONAL CHP Opportunities in Michigan Technical Potential (Megawatts)



VALUE PROPOSITION: STATE OF MICHIGAN

- New <u>privately financed</u> CHP generation can help meet future demand without high cost of new power plants
- Demand reductions resulting in lower costs to Michigan consumers
  - Take "load" off the grid
  - Greater efficiency of CHP/WHP systems
  - Reduction in "line losses" (7%+)
- Job creation and increases in Michigan's manufacturing competitiveness
- Increased energy resiliency during natural disasters and other emergencies

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VALUE PROPOSTION: UTILITIES

- Reduction in peak demand
  - Fewer "black outs" and "brown outs"
  - Reduce need to build expensive new power plants to meet consumer requirements
- Reduction in load on existing transmission and distribution lines
  - Reduce need to build new lines
  - Lower repair and maintenance costs
- Reduction in emissions
  - Reduce greenhouse gases, criteria pollutants (such as NOx, SO2 and PM), and hazardous air pollutants
  - Reduced environmental compliance costs

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How Can Michigan Promote CHP in the SB 437 IRP Process?

1) Establish procedures for a serious, transparent, and comprehensive IRP process;
2) Require CHP resources be fully and fairly considered in the IRP process; and
3) Provide standards for evaluation of:
   A) Technical and economic potential of new resources;
   B) Economic and social costs and benefits of new resources; and
   C) Barriers to deployment of new resources.

Thank you

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